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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/659,885	09/12/2000	Paolo Menegoli	850063.498D2	2853

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EXAMINER

LOKE, STEVEN HO YIN

ART UNIT PAPER NUMBER

2811

DATE MAILED: 05/31/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/659,885

Applicant(s)

MENEGOLI, PAOLO

Examiner

Steven Loke

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

1. Claim 17 is objected to because of the following informalities: Line 2, "expitaxial layer" is unclear whether it is being referred to "epitaxial layer". Appropriate correction is required.
2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 17, 19 and 20 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Cogan (U.S. Patent no. 4,811,065 in PTO-1449).

In regards to claim 17, Cogan shows all the elements of the claimed invention in figs. 6 and 7 and in column 4, lines 25-56 of the written description. It comprises: a method of operating a DMOS transistor [90] having a drain of first conductivity formed in an epitaxial layer [102] of same conductivity, a body [91] formed of second conductivity in the epitaxial layer, a source [92] of first conductivity in the body, a gate electrode [96] positioned above the source, the body, and the epitaxial layer, a conductive contact (drain terminal) coupled to the drain, and a metallic source contact [110] coupled to the source and to the epitaxial layer to form a Schottky diode, comprising diverting current from the source [92] of the DMOS transistor with ^{the} a Schottky diode [110, 102] that is co-integrated with the DMOS transistor when the source [92] becomes more positive than a drain [102] of the DMOS transistor.

In regards to claim 19, Cogan shows the act of diverting current from a source of the DMOS transistor with a Schottky diode includes diverting current from a p-n junction

body diode [91, 102] having a cathode coupled to the drain [102] and an anode coupled to the source [92].

In regards to claim 20, Cogan shows the act of diverting current from a source of the DMOS transistor with a Schottky diode includes diverting current from the source with a Schottky diode having a cathode coupled to the drain [102] and an anode coupled to the source [92].

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cogan in view of Pearce (EP 0747969 A1 in PTO-1449).

Cogan differs from the claimed invention by not showing the act of diverting current from a source of the DMOS transistor includes diverting current from a parasitic bipolar transistor having a collector coupled to a substrate in which both the DMOS transistor and the Schottky diode are integrated.

Pearce shows an n-channel type lateral DMOS transistor formed on a p-type substrate in fig. 2.

Since both Cogan and Pearce teach an n-channel type DMOS transistor with a lateral channel region, it would have been obvious to have the p-type supporting substrate of Pearce in Cogan because it provides support for a transistor.

The combined device of Cogan and Pearce would inherently show the act of diverting current from a source of the DMOS transistor includes diverting current from a parasitic bipolar transistor having a collector coupled to a substrate in which both the DMOS transistor and the Schottky diode integrated.

6.. Applicant's arguments filed 2/25/02 have been fully considered but they are not persuasive.

It is urged, in pages 2 and 3 of the remarks, that Cogan does not disclose or suggest a DMOS transistor having the construction and method of operation as recited in the disclosed and claimed embodiments of the invention. However, as seen in the rejection, Cogan device does read on the claimed structure and the written description of Cogan shows the method of operation of the device. Even though claim 9 of U.S. Patent No. 5,925,910 discloses a device similar to that of the present invention, the Examiner find out the device of Cogan does read on the claimed structure.

It is urged, in page 3 of the remarks, that applicant is unable to find any teaching in Pearce that provides the missing element of diverting current from a parasitic bipolar transistor having a collector coupled to a substrate in which both a DMOS transistor and a Schottky diode integrated. However, the combined device of Cogan and Pearce inherently shows the claimed subject matters as claimed in claim 18.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Loke whose telephone number is (703) 308-4920. The examiner can normally be reached on 7:50 am to 5:20 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

sl
May 30, 2002

Steven Loke
Primary Examiner

